

WATER QUALITY POLICIES, REGULATIONS, AND INITIATIVES

Fairfax County has several policies and regulatory mechanisms addressing water quality issues. On June 21, 2004, the County's Board of Supervisors adopted an Environmental Excellence 20-year Vision Plan, also referred to as the "Environmental Agenda." This policy document provides guidance on decisions and initiatives addressing a broad range of environmental issues; in all, forty policy statements are addressed within the following six broad areas:

- Growth and Land Use;
- Air Quality and Transportation;
- Water Quality;
- Solid Waste;
- Parks, Trails, and Open Space; and
- Environmental Stewardship.

The Environmental Excellence 20-year Vision Plan has been referred to County staff for follow-up action.

Aside from the Environmental Excellence 20-year Vision Plan, policy guidance is provided in the County's "Policy Plan," which is the Countywide policy element of the County's Comprehensive Plan and which incorporates this document by reference. Key objectives and policies related to water quality protection can be found in the Environment and Public Facilities sections of the document. Of particular note are the following:

- The Environmental Quality Corridor (EQC) policy (see Objective 9 of the Environment section), which recommends protection and restoration of environmentally-sensitive lands, including 100-year floodplains, steep slopes (gradients of 15% or greater) in stream valleys, wetlands connected to stream valleys, minimum buffer areas, and upland habitats that augment the habitats and buffers provided by stream valleys. The identification and protection of EQCs occurs through negotiations with developers during the zoning process (the reviews of rezonings, special exceptions, special permits, variances, and related applications); EQCs are typically broader in area, and often extend upstream from, areas afforded protection through the County's Floodplain Regulations and Resource Protection Area requirements. This policy has been effective in preserving and restoring sensitive lands as identified during the zoning process; however, EQC protection is not required by regulation, and therefore this policy is not implemented for "by right" development (development that is pursued, by right, through existing zoning).

By-right development is, however, subject to land development regulations as described elsewhere in this report.

- An objective to “Prevent and reduce pollution of surface and groundwater resources” and to “protect and restore the ecological integrity of streams in Fairfax County” (see Objective 2 of the Environment section). Policies under this objective include, but are not limited to, support for the following:
 - The provision of stormwater management best management practices;
 - The minimization of applications of fertilizers, pesticides, and herbicides;
 - The siting of stormwater management facilities outside of stream valley EQCs unless the facilities are designed to provide a regional function or the EQCs have been significantly degraded;
 - The limiting of erosion and sedimentation from construction activities;
 - The retrofitting of stormwater quantity control facilities to provide water quality functions;
 - The protection of groundwater resources from detrimental land use activities; and
 - The application of a variety of better site design and low impact development techniques to reduce stormwater runoff volumes and peak flows, to increase groundwater recharge, to increase preservation of undisturbed areas, and to minimize the impacts that new development and redevelopment projects may have on the County’s streams.
- Background discussion and an objective to “Protect the Potomac Estuary and the Chesapeake Bay from the avoidable impacts of land use activities in Fairfax County” (see Objective 3 of the Environment section).
- An objective recommending conservation and restoration of tree cover on developed and developing sites (see Objective 10 of the Environment section).
- An objective supporting the use of open space/conservation easements as tools to preserve environmental resources (see Objective 11 of the Environment section).
- An objective supporting a “comprehensive drainage improvement and stormwater management program” in order to “maximize property protection and environmental benefits throughout the watershed” (see Objective 36 of the Public Facilities section).
- An objective supporting “a system of drainage facilities that prevents or minimizes structure flooding, stream degradation and traffic disruption in an efficient, cost effective and environmentally sound manner.” (see Objective 37 of the Public Facilities section).
- Recently-adopted Plan guidance as follows:
 - A policy supporting watershed management planning (see Objective 2 of the Environment section).

- A policy supporting the optimization of water quality controls for redevelopment consistent with revitalization goals (see Objective 2 of the Environment section).
- A policy supporting the remediation of development and redevelopment sites that have been subject to contamination by toxic substances or other hazardous materials (and referencing the need to ensure that unacceptable health or environmental risks will not occur as a result of contamination associated with nearby properties) (see Objective 2 of the Environment section).
- A policy supporting the conclusions and recommendations of this Supplement (see Objective 3 of the Environment section).
- A policy incorporating the Chesapeake Bay Preservation Areas map into the Comprehensive Plan (see Objective 3 of the Environment section).
- A policy supporting State guidance regarding tidal shoreline erosion control (see Objective 3 of the Environment section).
- A policy supporting State and Chesapeake Bay Program guidance regarding tidal shoreline access facilities (see Objective 3 of the Environment section).

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As noted earlier, the Fairfax County Park Authority owns more land in the County (over 23,000 acres) than any other single entity. The Parks and Recreation section of the Policy Plan contains a number of objectives and policies that are supportive of water quality protection and restoration, including the preservation of ecologically-sensitive lands, the establishment of an integrated network of greenways, and the acquisition of stream valley areas. The Fairfax County Park Authority's Park Policy Manual contains more detailed objectives and policies, including statements supporting the protection of riparian corridors and water quality. In 2004, the Fairfax County Park Authority adopted its first Natural Resource Management Plan; this document is discussed later within this section.

Key water quality protection regulatory efforts include the following (note: some of these discussions have been excerpted from the County's Web site):

- The Chesapeake Bay Preservation Ordinance (Chapter 118 of the Fairfax County Code): As noted earlier in this report, the County's Chesapeake Bay Preservation Ordinance requires the provision of riparian buffer areas around all perennial streams and requires development and redevelopment throughout the County to achieve water quality performance standards. The Ordinance also requires soil and water quality conservation planning activities on agricultural lands. The amendment of the Ordinance in 2003 served to increase, by approximately 30%, the extent of Resource Protection Areas in Fairfax County.
- The Floodplain Regulations of the Zoning Ordinance: These Regulations limit uses that can occur within County-defined floodplain areas, which include all areas that would be flooded by the rainfall event that is expected to occur, on average, once every 100 years, for any stream that collects drainage from an area greater than 70 acres. As noted earlier in this report, minor floodplains are associated with streams with drainage areas between 70 and 360 acres, and other floodplains, with drainage areas greater than 360 acres, are commonly referred to as "major floodplains." A limited number of types of uses are permitted in major floodplains without the need of a Special Exception approval by the Board of Supervisors. There are no explicit limitations on the types of uses allowed in minor floodplains; however, all uses in floodplains must meet stringent use limitations, including a requirement that these uses not increase flooding either upstream or downstream of the use. Minimization of disturbance to the floodplain and environmental factors can also be considered in any determination as to whether a proposed use in a floodplain should be permitted. These use limitations have the effect of limiting substantially the extent of disturbance pursued in floodplain areas. It should also be noted that major floodplains are included in the County's Resource Protection Area Designation as set forth in the Chesapeake Bay Preservation Ordinance.
- Zoning: In 1982, the County rezoned roughly two-thirds of the area (nearly 41,000 acres) of the County's portion of the Occoquan Watershed to the R-C District, which allows no more than one dwelling unit per five acres of land. This was done in recognition of the relationship between land use intensity and water quality. Other low density areas did not have their zoning established for the purpose of water quality protection, but the low density character of these areas, as maintained through the zoning requirements, has been shown to be correlated with high quality conditions of streams in these areas.
- Best Management Practice (BMP) requirements: Concurrent with the 1982 rezoning, the County established a "Water Supply Protection Overlay District" (WSPOD) in its Zoning Ordinance consisting of the entirety of its portion of the Occoquan Watershed. Stormwater management best management practices (BMPs) were required for all new development exceeding a density of one dwelling unit per five acres; a 50% phosphorus reduction requirement was established. This formalized in the Zoning Ordinance a BMP requirement that had been implemented in 1980 with a requirement in the Public Facilities Manual. The combination of land use and structural controls was pursued in order to protect one of the County's major sources of drinking water from degradation associated with nonpoint source pollutants. In 1993, the County established a jurisdiction-wide BMP requirement through the Chesapeake Bay Preservation Ordinance.

However, BMP requirements in the WSPOD (which have been incorporated into the broader Ordinance) remain more stringent than BMP requirements elsewhere in the County.

- The Public Facilities Manual (PFM): This manual sets forth the guidelines that govern the design of all public facilities that must be constructed to serve new development within Fairfax County. In this context, public facilities include certain facilities that serve a public purpose by mitigating the off-site impacts of development (e.g., stormwater management facilities) even though such facilities are privately maintained. Requirements to comply with the PFM are incorporated into the County's Subdivision Ordinance and Zoning Ordinance. Amendments to the PFM are approved by the Board of Supervisors subsequent to public hearings before the Planning Commission and Board. Prior to Planning Commission consideration, proposed PFM amendments are considered by the County's Engineering Standards Review Committee, which has been established by the Board of Supervisors to provide technical, economic, and environmental reviews and assessments of matters relating to the design and provision of public facilities. The PFM contains performance and design standards addressing a broad range of engineering and environmental issues. Of particular note with respect to water resource issues are: policies and detailed guidance regarding the detention of stormwater runoff; the policy and requirements for adequate drainage (commonly known as the "adequate outfall" policy) requiring drainage controls sufficient to protect downstream properties from erosion and flooding; and stormwater runoff quality control criteria (including phosphorus removal efficiencies) for various types of BMP facilities).
- Regulation of septic systems: All on-site sewage disposal facilities are regulated by Chapter 68.1 of the Fairfax County Code (Individual Sewage Disposal Facilities). This Chapter incorporates the State Board of Health's Sewage Handling and Disposal Regulations and adds a number of requirements that extend beyond those of the State's Regulations, some of which track requirements of the Chesapeake Bay Preservation Ordinance. Of particular note are pump-out requirements (systems must be pumped-out at least once every five years, and pump-out notifications must be provided to the Health Department); flow diversion requirements (flow must alternate between equally sized drainfields, allowing each absorption area to "rest" for approximately one year, thereby providing for recovery of these areas); and reserve absorption site requirements (newly established lots must now provide 100% reserve absorption sites). The County's on-site sewage disposal requirements were strengthened considerably with the adoption of an amendment to Chapter 68.1 on July 7, 2003.
- Erosion and Sediment Control: Chapter 104 of the Code of the County of Fairfax, Erosion and Sediment Control, has been adopted to conserve and protect the land, water, air, vegetation and other natural resources of Fairfax County and to alleviate erosion, sedimentation, and other harmful effects of land-disturbing activities on neighboring land and streams by ensuring that the owner of the property on which land-disturbing activities are to be carried out provides adequate controls against erosion and sedimentation and takes necessary measures to preserve and protect trees and other vegetation. This chapter of the County Code requires that no person may engage in land-

disturbing activity in Fairfax County until they have submitted to the County a conservation plan for the land-disturbing activity and the plan has been reviewed and approved by the Director of the Department of Public Works and Environmental Services (DPWES) or his designee. The plan must explain and illustrate the measures and standards that are to be taken to control erosion and sedimentation. During construction, the project is inspected by County staff to ensure that the controls are properly installed and maintained in accordance with County standards.

DPWES continues to focus efforts on making improvements that will further enhance the quality of review and inspection services associated with erosion and sediment control. Many recommendations of the Infill and Residential Development Study conducted by the County in 2000 have been implemented; these changes have strengthened the County's policies and have also increased flexibility by allowing more innovative and effective measures for the control of erosion. DPWES is increasing efforts to: stay abreast of innovations and technology in controlling erosion; strengthen County regulations; train staff; and provide educational information to industry and citizen groups. DPWES has established a 24 hour hotline that citizens can call to report possible illegal land-disturbing activities or violations of the County's erosion and sediment control requirements.

- Wetlands Zoning Ordinance (Chapter 116 of the Fairfax County Code): This chapter requires approval from the County's Wetlands Board for certain uses within tidal wetland areas. County staff and the Wetlands Board relies on guidance from the Virginia Marine Resources Commission (VMRC) and Virginia Institute of Marine Sciences (VIMS) in issuing recommendations and decisions regarding activities requiring permits. This document and related text in the Comprehensive Plan serve to incorporate VIMS guidance on tidal wetland activities into the Plan by reference.

The County has a comprehensive array of programs and initiatives aimed at reducing point source and nonpoint source pollution of the County's waters. It is not the intent of this document to serve as a catalog of these efforts. However, a few efforts are of particular note:

- The County recently completed a comprehensive perennial stream mapping effort to identify all perennial streams in the County. The field protocol that was established in support of this effort has been endorsed by the Department of Conservation and Recreation's Division of Chesapeake Bay Local Assistance for use by other jurisdictions subject to the Chesapeake Bay Preservation Act.
- In recognition of the changing character of development that is occurring in the County (from development on large, vacant tracts of land to infill development and redevelopment) and on the unique issues associated with these changes, the County published an "Infill and Residential Development Study" report in July, 2000. The report outlined a series of recommendations regarding policy and regulatory changes recommended to better address site design, neighborhood compatibility, traffic/transportation, tree preservation, stormwater management, and erosion and sediment control concerns associated with infill development. The report was accepted

by the County's Board of Supervisors in January, 2001, and efforts to implement the 35 recommendations of the report are continuing. A more detailed discussion of the stormwater management and erosion and sediment control recommendations is provided later in this report.

- County policy provides support for the application of better site design and low impact development techniques where appropriate, and County staff is reviewing its stormwater management policies, practices, and requirements in order to incorporate standards for the application of these techniques. Commitments to these design techniques, where appropriate, are sought through negotiations with developers during the course of zoning reviews.
- The Northern Virginia Soil and Water Conservation District (NVSWCD), which is funded primarily by Fairfax County, is leading a project to explore the incorporation of low impact development (LID) concepts on a 55-acre site in the Laurel Hill area of the County. The effort will include the installation and monitoring of LID techniques as well as public outreach. NVSWCD has also sited and designed a rain garden within an existing multifamily residential community; the facility was constructed with the assistance of the Virginia Department of Forestry and the County's Maintenance and Stormwater Management Division.
- The County completed a baseline evaluation of the ecological health of its stream system (the Stream Protection Strategy Program) and intends to update this evaluation on a continuing basis, as described earlier in this report.
- Also as noted earlier in this report, the County has collected an extensive set of baseline stream condition information to support watershed protection and restoration efforts. A Stream Physical Assessment Report was published in February, 2004.
- The County is developing watershed management plans for all 30 of its watersheds. These plans will serve to provide an assessment of management needs and to prioritize solutions within each watershed. The overall goal for the development of these plans is to provide a consistent basis for the evaluation and implementation of solutions for protecting and restoring the ecological quality of the County's streams and watersheds. The County has developed an extensive public involvement campaign to engage and involve the community in this effort. Steering committees consisting of stakeholder organizations and individuals are overseeing the development of the watershed management plans, and numerous public meetings have been, and will be, held to develop community-based solutions to water quality concerns. The County has received the National Association of Counties 2004 Achievement Award for its Watershed Management Program.
- The County conducts inspection and maintenance programs for stormwater management systems to ensure their effectiveness.

- The County has conducted a number of stormwater control retrofit projects to incorporate water quality control measures into existing stormwater management facilities. Shallow wetland marshes have been established in a number of facilities to increase their water quality and ecological values.
- The County has partnered with NVSWCD and community organizations on streambank stabilization projects using “soft-engineering” techniques.
- Through a partnership among Fairfax County, NVSWCD, the Natural Resources Conservation Service, and two citizens groups, leading-edge technology was used to restore and stabilize a severely degraded and eroding stream channel to a natural, self-sustaining condition. The principles of applied fluvial geomorphology and soil bioengineering techniques were used to analyze, design, and install the project. The stream was reconfigured into a gently meandering stream that is stable. The erosive velocity of the flow has been slowed, and natural vegetation stabilizes the stream banks.
- In 2002, the County’s Board of Supervisors directed staff to review the use of regional stormwater management ponds as well as other types of stormwater controls as watershed management tools. A staff subcommittee has undertaken a comprehensive evaluation of the County’s stormwater management policies and practices and has issued a series of recommendations to address a broad scope of stormwater management issues. In short, the subcommittee has concluded that regional ponds play a role in the County’s stormwater management program but that they ought to be considered as only one of many tools available to address site-specific stormwater management needs. There has also been a recognition of a need to design regional stormwater management facilities, and the stormwater management system in general, to better integrate ecological, economic, and social considerations and for a more complete incorporation of better site design and stormwater management practices into the overall program. In all, the County’s Regional Pond Subcommittee has developed a “unified position” on regional ponds and other watershed management tools and has issued 61 specific recommendations pertaining to this issue. The Subcommittee recommendations are undergoing further consideration.
- Fairfax County participates in the regional Occoquan Basin Nonpoint Pollution Management Program, which is coordinated and directed by the Northern Virginia Regional Commission (NVRC). Program participants include local governments, Fairfax Water, the Upper Occoquan Sewage Authority, the Occoquan Watershed Monitoring Laboratory, the Prince William County Service Authority, and the Virginia American Water Company. In addition, one person represents several soil and water conservation districts, including NVSWCD. NVRC maintains the Occoquan Basin Computer Model, which is used to assess management actions that may be needed to ensure the continued viability of the Occoquan Reservoir as a high quality source of drinking water. The Occoquan Nonpoint Source Technical Advisory Committee (TAC) is presently undertaking a multi-year project to prepare a watershed management plan for the entirety of the Occoquan Watershed, of which 17% is located in Fairfax County.

- In March, 2002, the Board of Supervisors recognized the 20-year anniversary of the Occoquan “downzoning” action by designating 2002 as the “Occoquan Watershed Year.” As part of this celebration, the Board established the New Millennium Occoquan Watershed Task Force to examine the impacts of increasing population, stormwater management, and other challenges in the watershed and to present its findings and recommendations to the Board. On January 27, 2003, the Task Force presented its report, which contained 29 recommendations addressing a broad range of issues, including the maintenance of the integrity of the downzoning action, the protection of streams in the watershed, the maintenance of regional policies affecting the reservoir, the enhancement of efforts to establish open space easements in the watershed, the review of standards and guidelines addressing special permit, special exception, and public uses, support of watershed management planning efforts, support for tree preservation and restoration efforts, support for the study of establishing an onsite sewage disposal system management authority, increased citizen involvement, continued regional coordination, support for stormwater management and erosion and sediment control recommendations from the Infill and Residential Development Study, and implementation and reporting. Many of the recommendations supported the continuation of ongoing efforts; others recommended new actions. Efforts are under way to address these recommendations; an implementation plan was presented to the Board of Supervisors by County staff on July 7, 2003.
- The County has acquired, through purchase, land transfer, and dedication, substantial areas of new park land. Of particular note are recent acquisitions in the Laurel Hill area and in the far western portion of the County; 878 acres of the 3,200 acre Laurel Hill site (the property that once housed facilities operated by the District of Columbia Department of Corrections) have been dedicated to the Fairfax County Park Authority’s Laurel Hill Park, and it is anticipated that an additional 300 acres will soon be dedicated. Additional acreage that is designated as parkland is for Regional Park purposes and will be managed by the Northern Virginia Regional Park Authority at Occoquan Regional Park. In western Fairfax County, over 3,000 acres of newly acquired and existing parkland have been assembled in the Cub Run and Bull Run Watersheds and will be planned comprehensively under the title of “Sully Woodlands.” Planning efforts are under way for both Laurel Hill and Sully Woodlands.
- In 2004, the Fairfax County Park Authority (FCPA) adopted its first Natural Resource Management Plan. This document is aimed at ensuring that agency-wide efforts will be coordinated consistent with FCPA’s resource preservation-related policies. The following seven elements are included in this Plan: Natural Resource Management Planning; Vegetation; Wildlife; Water Resources; Air Quality; Human Impact on Parklands; and Education. Each of these elements presents a series of strategies for pursuit by FCPA in support of its overall resource preservation mission (“to set aside public spaces for and assist citizens in the protection and enhancement of environmental values, diversity of natural habitats . . . to guarantee that these resources will be available to both present and future generations . . .”). Strategies throughout this document commit to the stewardship and enhancement of natural resources. The Water Resources element references a number of the recent water resource initiatives in the County (e.g., Infill and

Residential Development Study; Watershed Planning; Stream Assessment Project; Regional Pond Subcommittee) and presents a series of strategies addressing issues including: water quality and stream valley protection; water resource inventorying, monitoring, and assessment; coordination with other governmental and nonprofit entities to protect and enhance water resources; and ensuring that adverse water quality impacts of new or renovated FCPA facilities are reduced through the incorporation of best management practices, low impact development techniques, and other innovative techniques.

- The County has developed a partnership with the Northern Virginia Conservation Trust to facilitate and promote the protection of environmentally sensitive lands through the acquisition of open space easements.
- Fairfax County has pursued substantial upgrades to the Noman M. Cole, Jr. Pollution Control Plant in order to reduce point source nutrient pollutant discharges into Pohick Creek, which is a tributary of the Potomac River. As noted earlier in this document, the recent plant upgrades have incorporated biological nutrient removal (BNR); the plant now removes almost 100% of the ammonia from plant influent wastewater, and the plant's effluent has been certified to be free of toxics by an independent lab, as required by the facility's VPDES permit. The County also participates in the regional Upper Occoquan Sewage Authority (UOSA) water reclamation facility, which discharges treated wastewater into the Occoquan Reservoir with total phosphorus concentrations well below its permitted limit of 0.1 mg/l.
- Strategic planning efforts have been undertaken or are under way at the sub-agency, agency, and interagency levels to ensure that County staff efforts are in line with, and actively support, the County staff's Vision and Core Purpose statements. Included in these statements is the following: "Practicing Environmental Stewardship: Local government, business, community organizations, and residents seek ways to use all resources wisely and to protect and enhance the County's natural environment and open space. As a result, residents feel good about their quality of life and embrace environmental stewardship as a personal and shared responsibility."
- As part of the strategic planning effort, the County's Department of Public Works and Environmental Services has, through its stormwater business area, developed a strategic plan for the County's stormwater management efforts; a focus of this plan is a recognition of a need to improve the ecological health of the County's watersheds while optimizing the resources that are available for stormwater management efforts and identifying new resources that will be necessary to meet increasing demands on the program. Efforts are under way to implement actions identified in this plan.
- The County pursues a number of mechanisms to engage the community on stormwater management issues and on the broader scope of environmental issues. Of particular note are the watershed management planning outreach efforts described earlier. Also of note are numerous efforts by the Northern Virginia Soil and Water Conservation District (NVSWCD). The District recently won awards from the National Association of

Conservation Districts for its Web site (which focuses largely on water resource protection issues) and “Conservation Currents” newsletter.

- NVSWCD sponsors neighborhood education programs about the dangers of dumping pollutants (e.g., yard debris, fertilizer, used motor oil, chemicals, animal waste, trash, etc.) in storm drains. The information and education program culminates with the stenciling of a reminder message on the face of several drains throughout the neighborhood.
- NVSWCD has an extensive Volunteer Stream Monitoring Program that supplements other County monitoring efforts and that broadens citizen involvement in stormwater management and watershed management issues.
- A Municipal Separate Storm Sewer System (MS4) permit pursuant to the Clean Water Act and State Water Control Law was issued by the Virginia Department of Environmental Quality (VDEQ) to Fairfax County in 1997 and was reissued in 2002. This permit authorizes all existing and new stormwater discharges to waters of the State from those portions of the stormwater management system owned or operated by the County. The permit requires both dry and wet weather screening of the County’s stormwater management system to detect the presence of illicit connections to the system, to investigate and address known areas in the County that are contributing excessive levels of pollutants to the system, and to identify and possibly investigate industrial and other high-risk areas to determine if they are contributing substantial pollutant loads to the system. The County’s permit requires the submission of an annual report outlining the County’s stormwater management program achievements; many of the activities noted herein have been incorporated into the annual reports and the overall permit. ■